Louisiana Department of Environmental Quality (LDEQ) Office of Environmental Services

STATEMENT OF BASIS

CARVILLE ENERGY CENTER
PART 70 PERMIT RENEWAL
CARVILLE ENERGY, LLC
ST. GABRIEL, IBERVILLE PARISH, Louisiana
Agency Interest Number: 51854
Activity Number: PER20040004
Draft Permit 1280-00092-V2

I. APPLICANT:

Company:

Carville Énergy, LLC P.O. Box 418 St.Gabriel, LA 70776

Facility:

Carville Energy Center 4322 LA HWY 30, St. Gabriel, Iberville Parish, Louisiana Approximate UTM coordinates are 688.0 kilometers East and 3,345.7 kilometers North, Zone 15

II. FACILITY AND CURRENT PERMIT STATUS:

Carville Energy owns and operates a cogeneration power plant near St. Gabriel in Iberville Parish. The plant, known as Carville Energy Center, has an electrical generation rating of a nominal 530 megawatts. The Carville Energy Center currently operates under Permit No. 1280-00092-V2, issued May 16, 2001, Prevention of Significant Deterioration (PSD), PSD-LA-638(M-1), issued May 16, 2001, and Permit No. 1280-00092-IV1, issued May 22, 2002.

The facility submitted a timely application for a Part 70 permit renewal and an Acid Rain permit renewal. A minor modification to the PSD has been submitted as well.

An application for a Part 70 permit renewal included the following sources:

Permit #	Units or Sources	Date Issued
1280-00092-V1	1-98 No. 1 Cogeneration Unit	May 16, 2001
	2-98 No. 2 Cogeneration Unit	
	1-98A Gas Turbine No. 1	
	2-98A Gas Turbine No. 2	
	1-98B HRSG No. 1	
	2-98B HRSG No. 2	
	5-00 Cooling Tower	
	5-98 Fugitive Emissions	

The following sources are part of the renewal for Carville Energy Center and will be included in the new permits in addition to previously permitted sources.

Permit #	Units or Sou	rces
1280-00092-V2	EQT 1	1-98A Gas Turbine No. 1
1280-00092-IV2	EQT 2	2-98A Gas Turbine No. 2
PSD-LA-638(M-2)	EQT 3	5-00 Cooling Tower
	EQT 4	8-01 Fuel Gas Heater
	EQT 5	7-01 Emergency Generator
	EQT 6	1-98B HRSG Duct Burner No. 1
	EQT 7	2-98B HRSG Duct Burner No. 2
	FUG-1	5-98 Fugitive Emissions
	GRP 1	Permitted Totals
į ,	GRP 2	Acid Rain Affected Sources
	GRP 5	1-98 No.1 Cogeneration Unit
	GRP 6	2-98 No. 2 Cogeneration Unit
1	GRP 7	Scenario 1: 1-98 SU No.1 Cogeneration Unit
	GRP 8	Scenario 2: 1-98 SD No.1 Cogeneration Unit
	GRP 9	Scenario 3: 1-98 NO No.1 Cogeneration Unit
	GRP 10	Scenario 4: 2-98 SU No.2 Cogeneration Unit
	GRP 11	Scenario 5: 2-98 SD No.2 Cogeneration Unit
	GRP 12	Scenario 6: 2-98 NO No.2 Cogeneration Unit

III. PROPOSED PERMIT / PROJECT INFORMATION:

Proposed Permit

A permit application and Emission Inventory Questionnaire were submitted by Calpine Operating Services Company on June 10, 2004, requesting a Part 70 operating and Acid Rain permit renewal. Additional information dated June 29, and December 19, 2006, was also received.

Project description

Carville Energy Center is a cogeneration power plant that supplies the primary source of steam to the Total Petrochemicals USA facility (Cosmar, Inc.), located north of the site. The facility also provides electricity to the nearby electric transmission system. The facility consists of two combustion turbine units, one steam turbine-generator unit, and two heat recovery steam generator (HRSG) units. The plant electrical generation rating is a nominal 530 megawatts. Each combustion turbine provides exhaust gas to one HRSG unit where steam is produced. The steam is then supplied to the steam—turbine generator for electrical generation and to the adjacent Total Petrochemicals USA facility for employment by the steam host. The units consist of two General Electric Frame 7F gas turbines that are fueled with natural gas.

Emissions occur from two cogeneration units consisting of turbines and HRSGs, one seven-cell cooling tower, equipment fugitives, and other activities such as start-up, shutdown, and insignificant activities.

The duct burners in the HSRGs will fire natural gas and will utilize combustion turbine exhaust as the combustion air supply. Consequently, the duct burners can not operate if the combustion turbines are not operating. These duct burners will be utilized to accommodate fluctuations in steam and electric demands.

Another operating condition for the plant occurs when the combustion turbines operate in power augmentation mode. Power augmentation is a combustion turbine operating mode where, for periods of time, the combustion turbine utilizes steam injection to increase output beyond normal operating levels. Additional electric generating capacity from the combustion turbines can be increased approximately 10% above 100% normal capacity for short periods of time. Power augmentation mode is limited to 1,500 hours per year per combustion turbine.

Start-up / Shut-down operations at the power plant are included in this modification. Start-up operations are defined as the time when the unit starts combusting fuel until Mode 6Q is achieved. Mode 6Q is primarily driven by the reference temperature of the combustion turbine, which is a temperature of the exhaust of the turbine. The gas valves open when the reference temperature on the combustion turbine reaches 2,145°F. The Continuous Emission Monitor System (CEMS) has a signal for when the unit reaches Mode 6Q. Shut-down is the reverse of Start-up, when the unit transfers out of Mode 6Q at 2,140°F until no fuel is combusted. Because the Carville Energy Center uses natural gas to fuel the turbines, only Nitrogen Oxides (NO_X), Carbon Monoxide (CO), and Volatile Organic Compounds (VOCs) are the pollutants of concern.

A substantial technological limitation exists with respect to limiting start-up / shut-down emissions for combined cycle generating units. Start-up event duration is limited by the time required to adequately warm the heat recovery steam generator (HRSG), associated steam-handling systems and the steam turbine without imparting harmful thermal stresses to this equipment. As the combustion turbine begins operation, the exhaust gases which pass through the HRSG warm the water filled tubes, which begins the process of creating steam to drive the steam turbine. Although the process of creating steam can begin relatively quickly, an abrupt introduction of steam to the steam turbine can result in uneven expansion of components. This uneven expansion of components can have severe adverse effects on its ability to operate, as well as creating a significant safety hazard. In general, the more time a combined cycle generating unit has been off-line, the more time is required to properly warm the steam cycle.

There are two types of start-up events depending on the length of time that the turbine is off-line between operational events. A cold start is associated with the turbine being offline for more than 48 hours, while a warm start occurs when a unit is down for less than 48 hours.

GRP005, 1-98 No. 1 Cogeneration Unit, lists the Annual (TPY) emission rates which represent the maximum potential- to-emit (PTE) for the unit. This rate includes both annual rates for normal operations (with an adjusted operating time) and also the start-up & shut-down operating rates. The permittee can select which of the following scenarios and its associated emission rates to operate under without exceeding the maximum PTE for GRP005. GRP007, Scenario 1: 1-98 SU No. 1 Cogeneration Unit, provides the Maximum (lb/hr) emissions for start-up operations during the year for GRP005. GRP008, Scenario 2: 1-98 SD No. 1 Cogeneration Unit provides the Maximum (lb/hr) emissions for shut-down operations during the year for GRP005. GRP009, Scenario 3: 1-98 NO No. 1 Cogeneration Unit, provides the Average (lb/hr) and Maximum (lb/hr)

emissions for normal, year-round, operations of GRP005. Start-up/shut-down emissions are not included in Scenario 3.

GRP006, 2-98 No. 2 Cogeneration Unit, lists the Annual (TPY) emission rates which represent the maximum potential-to-emit (PTE) for the unit. This rate includes both annual rates for normal operations (with an adjusted operating time) and also the start-up & shut-down operating rates. The permittee can select which of the following scenarios and its associated emission rates to operate under without exceeding the maximum PTE for GRP006. GRP010, Scenario 4: 2-98 SU No. 2 Cogeneration Unit, provides the Maximum (lb/hr) emissions for start-up operations during the year for GRP006. GRP011, Scenario 5: 2-98 SD No. 2 Cogeneration Unit, provides the Maximum (lb/hr) emissions for shut-down operations during the year for GRP006. GRP012, Scenario 6: 2-98 NO No. 2 Cogeneration Unit, provides the Average (lb/hr) and Maximum (lb/hr), emissions for normal, year-round, operations of GRP006. Start-up/shut-down emissions are not included in Scenario 6.

Start-up/shut-down emissions from the two turbines, EQT001, 1-98A Gas Turbine No. 1, and EQT0002, 2-98A Gas Turbine No. 2, are existing emissions which are being reconciled into the permit. These emissions have existed at the site since initial start-up but have not been required to be in either the Part 70 or the PSD permit. The emission increases are not due to the installation or modification of any new equipment at the site.

In this Part 70 renewal, Carville Energy will reduce the annual Particulate Matter (PM_{10}) emissions from the duct burners, EQT006, 1-98B HRSG Duct Burner No. 1, and EQT007, 2-98B HRSG Duct Burner No. 2, by 8.72 tons per year. The reduction is due to a recalculation of the annual PM_{10} emissions by Carville Energy. This reduction is not due to a modification of the existing equipment.

Carville Energy proposes to make the following changes to the Carville Energy Center:

- Emission Point EQT 1, 1-98 No. 1 Cogeneration Unit, will include sources 1-98A, Gas Turbine No. 1, and 1-98B, HRSG No. 1, because both sources share a common stack.
- Emission Point EQT 2, 2-98 No. 2 Cogeneration Unit, will include sources 2-98A, Gas Turbine No. 2, and 2-98B, HRSG No. 2, because both sources share a common stock
- Include emissions from an emergency generator and a fuel gas heater.
- Include start-up/shut-down emissions.
- Update the list of insignificant activities.

Permitted Air Emissions

Estimated changes in permitted emissions in tons per year are as follows:

Pollutant	Before	After	Change
PM ₁₀	188.56	180.16	- 8.40
SO_2	13.30	12.18	- 1.12
NO_X	738.30	768.42	+ 30.12
CO	468.00	899.56	+ 431.56
VOC *	47.60	76.48	+ 28.88

* VOC LAC 33:III.Chapter 51 Toxic Air Pollutants (TAPs):

Pollutant	Before	After	Change
Benzene	4.33	4.32	- 0.01
Formaldehyde	8.65	8.66	+ 0.01
n-Hexane	1.08	1.08	-
Toluene	2.16	2.16	-
Total		16.22	

60.26

* Other VOC	(TPY):	
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Emission increases for both NO_X, CO, and VOC are primarily due to including the start-up / shut-down emissions of the two turbines, EQT001, 1-98A Gas Turbine No. 1, and EQT0002, 2-98A Gas Turbine No. 2. These emissions have existed at the site since initial start-up but have not been required to be in the permit. The emission increases are not due to the installation or modification of any new equipment at the site. Because of the shared stack, the annual start-up/shut-down emissions are included on GRP005, 1-98 No. 1 Cogeneration Unit, and GRP006, 2-98 No. 2 Cogeneration Unit. Carville Energy will demonstrate compliance with the permit limits for GRP005 and GRP006 by following the monitoring, recordkeeping, and calculation methods detailed in Section XII., Part 70 Specific Condition No. 1.

Permit PSD-LA-638(M-1) is being modified to include start-up/shut-down emissions from the Carville Energy Center. Best Available Control Technology (BACT) analysis has been performed on these operations and is included in the PSD permit.

IV. REGULATORY ANALYSIS

The applicability of the appropriate regulations is straightforward and provided in the Specific Requirements section of the proposed permit. Similarly, the Monitoring, Reporting, and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions, and standards are also provided in the Specific Requirements section of the proposed permit.

I. Table ?	Table 2. Explanation for Exemption Status or Non-Applicability of a Source	llity of a Source
ID No:	Requirement	Notes
	Emission Standards for Sulfur Dioxide Continuous Emissions	EXEMPT. Units emit less than 250 tons of SO ₂ per year.
GRP 1	Monitoring [LAC 33:III.1503.C]	
	Comprehensive Toxic Air Pollutant Emission Control Program II.AC 33:III.5105.B.2	EXEMPT. Electric utility steam-generating units are exempt from the requirements of LAC 33:III Chapter 51 Subchapter A.
	Chemical Accident Prevention and Minimization of Consequences	DOES NOT APPLY. The Carville Energy Center contains no sources which produce,
	[LAC 33:III.5901]	handle, process, or store substances listed in LAC 5907.A Table A in quantities greater than the listed threshold.
	Compliance Assurance Monitoring	EXEMPT. The Carville Energy Center is subject to Acid Rain requirements.
	Chemical Accident Prevention Provisions	DOES NOT APPLY. The Carville Energy Center contains no sources which produce,
	[40 CFR 68]	handle, process, or store substances listed in 40 CFR 68.130 in quantities greater than the listed threshold.
GRP 5, GRP 6	Control of Emissions of Nitrogen Oxides (NO _X)	EXEMPT. The Carville Energy Center is required to meet more stringent federal requirements and is exempt from LAC 33:III.2201.
	Comprehensive Toxic Air Pollutant Emission Control Program	EXEMPT. Electric utility steam-generating units are exempt from the requirements of
	[LAC 33:III.5105.B.2]	LAC 33:III Chapter 51 Subchapter A.
EQT 1, EQT 2,	Comprehensive Toxic Air Pollutant Emission Control Program	EXEMPT. Emissions from the combustion of Group I virgin fossil fuels are exempt
EQT 6, EQT 7	[LAC 33:III.5105.B.3]	from the requirements of LAC 33:III Chapter 51 Subchapter A.
	NESHAP - National Emission Standards for Hazardous Air	DOES NOT APPLY. The Carville Energy Center does not use chromium based water
EQT 3	Pollutants for Industrial Cooling Towers	treatment chemicals in the cooling water or cooling towers.
	[40 CFR 63.400(a)]	

The above table provides explanation for both the exemption status or non-applicability of a source cited by 1, 2 or 3 in the matrix presented in Section X (Table 1) of this permit.

Prevention of Significant Deterioration (PSD) Applicability

Carville Energy will include the start-up/shut-down emissions in PSD-LA-638(M-2). These emissions have existed at the facility since initial start-up but have not been required to be in the permit. Carville Energy will also reduce the annual Particulate Matter (PM₁₀) emissions from the duct burners, EQT006, 1-98B HRSG Duct Burner No. 1, and EQT007, 2-98B HRSG Duct Burner No. 2, by 8.72 tons per year. The reduction is due to a recalculation of the annual PM₁₀ emissions by Carville Energy. This reduction is not due to a modification of the existing equipment.

Carville Energy LLC proposes no physical changes or modifications to the Carville Energy Center that would trigger a Prevention of Significant Deterioration analysis.

This minor PSD modification presents the review for Particulate Matter (PM₁₀), Nitrogen Oxide (NO_X), Carbon Monoxide (CO), and Volatile Organic Compound (VOC) emissions from previous PSD modifications for Carville Energy, in addition to a review for the start-up/shut-down emissions. In permits PSD-LA-638(M-1) and PSD-LA-638, PM₁₀, NO_X, and CO emissions exceeded the PSD significance levels. The review, in accordance with PSD regulations, performed in these permits is still applicable for the cooling towers, turbines, or duct burners. Emissions of LAC 33:III.Chapter 51-regulated toxic air pollutants (TAP) have been reviewed pursuant to the requirements of the Louisiana Air Quality Regulations.

Best Available Control Technology (BACT) has been selected for the start-up/shut-down emissions included in this PSD modification. The selection of control technology was based on the BACT analysis using a "top down" approach and included consideration of control of toxic materials. There is no change in the BACT analysis specified in the previous PSD Permits No. PSD-LA-638(M-1), issued May 16, 2001, and PSD-LA-638 dated December 9, 1999, for the cooling towers, turbines, or duct burners.

Neither the minor modification to include the start-up/shut-down emissions nor the general commercial, residential, industrial, or other growth associated with it is expected to have a significant adverse impact on soil, vegetation, visibility, or air quality in the area of the facility or any Class I area.

The following table displays BACT limits for applicable sources at Carville Energy Center's facility.

MAX	KIMUM ALLOWABLE EMISSIONS RATES
ID No. / Description	BACT Limits
1-98A - Gas Turbine No. 1 (EQT001)	 PM₁₀: 19.73 lb/hr; Particulate emissions of 0.03 lbs/MM BTU without any controls, firing clean natural gas from the turbines, using good combustion practices. NO_X**: 85.00 lb/hr; Use Dry Low NO_X (DLN) combustors and burners. Maintain maximum NO_X emissions to 9 ppmv 15% O₂. The NO_X emissions for the combustion turbine during augmentation mode shall not exceed more than 15 ppmv at 15% O₂. CO: 50.00 lb/hr; Good design and operating practices, natural gas as fuel with DLN burners. Maximum CO emissions are limited to 25 ppmv at 15% oxygen. Operating Capacity: 1,908 MM BTU/hr (LHV)
2-98A - Gas Turbine No. 2 (EQT002)	 PM₁₀: 19.73 lb/hr; Particulate emissions of 0.03 lbs/MM BTU without any controls, firing clean natural gas from the turbines, using good combustion practices. NO_X*: 85.00 lb/hr; Use Dry Low NO_X (DLN) combustors and burners. Maintain maximum NO_X emissions to 9 ppmv 15% O₂. The NO_X emissions for the combustion turbine during augmentation mode shall not exceed more than 15 ppmv at 15% O₂. CO: 50.00 lb/hr; Good design and operating practices, natural gas as fuel with DLN burners. Maximum CO emissions are limited to 25 ppmv at 15% oxygen. Operating Capacity: 1,908 MM BTU/hr (LHV)
1-98B - HRSG Duct Burner No. 1 (EQT006)	PM ₁₀ : 4.68 lb/hr; Particulate emissions of 0.03 lbs/MM BTU without any controls, firing clean natural gas from the burners, using good combustion practices. NO _X : 46.80 lb/hr; Use Dry Low NO _X (DLN) combustors and burners. CO: 46.80 lb/hr; TPY; Good design and operating practices, natural gas as fuel with DLN burners. Maximum CO emissions are limited to 25 ppmv at 15% oxygen. Operating Capacity: 585 MM BTU/hr (LHV)
2-98B - HRSG Duct Burner No. 2 (EQT007)	 PM₁₀: 4.68 lb/hr; Particulate emissions of 0.03 lbs/MM BTU without any controls, firing clean natural gas from the burners, using good combustion practices. NO_X: 46.80 lb/hr; Use Dry Low NO_X (DLN) combustors and burners. CO: 46.80 lb/hr; Good design and operating practices, natural gas as fuel with DLN burners. Maximum CO emissions are limited to 25 ppmv at 15% oxygen. Operating Capacity: 585 MM BTU/hr (LHV)
Scenario 1: 1-98 SU - No. 1 Cogeneration Unit (GRP007)	NO _X : 153.2 lb/hr; Use Dry Low NO _X (DLN) combustor technology and good engineering practices.
Scenario 4: 2-98 SU - No. 2 Cogeneration Unit (GRP010)	CO: 750.53 lb/hr; Good engineering practice and combustion control.
Scenario 2: 1-98 SD - No. 1 Cogeneration Unit (GRP008) Scenario 5: 2-98 SD - No. 2 Cogeneration Unit (GRP011)	NO _X : 51.4 lb/hr; Use Dry Low NO _X (DLN) combustor technology and good engineering practices. CO: 271.7 lb/hr; Good engineering practice and combustion control. VOC: 16.1 lb/hr; Good engineering practice and combustion control.

^{*} Permittee shall not operate the gas turbine (combustion turbine) in the power augmentation mode for no more than 1,500 hours in a year.

MA	XIMUM ALLOWABLE EMISSIONS RATES
BACT Limits determined in PSD-LA	-638(M-1)
ID No. / Description	BACT Limits
5-00 - Cooling Tower (EQT003) **	PM ₁₀ : 1.19 lb/hr; 5.20 TPY; Use of mechanical or induced draft cooling towers through the use of drift eliminators and good operating practices. Operating Capacity: 116,580 gpm
	5-00 Cooling Tower (EQT003), was installed instead of the two three-cell cooling 4-98 Cooling Tower, permitted in PSD-LA-638.
BACT Limits determined in PSD-LA	-638
ID No. / Description	BACT Limits
	PM ₁₀ : 19.73 lb/hr; 78.58 TPY; Particulate emissions of 0.03 lbs/MM BTU without
	any controls, firing clean natural gas from the turbines, using good combustion practices.
1-98A - Gas Turbine No. 1	NO _X ***: 85.00 lb/hr; 281.55 TPY; Use Dry Low NO _X (DLN) combustors and burners. Maintain maximum NO _X emissions to 9 ppmv 15% O ₂ . The NO _X emissions for the combustion turbine during augmentation mode shall not exceed more than 15 ppmv at 15% O ₂ .
	CO: 50.00 lb/hr; 146.38 TPY; Good design and operating practices, natural gas as fuel with DLN burners. Maximum CO emissions are limited to 25 ppmv at 15% oxygen.
	Operating Capacity: 1,908 MM BTU/hr (LHV)
	PM ₁₀ : 19.73 lb/hr; 78.56 TPY; Particulate emissions of 0.03 lbs/MM BTU without any controls, firing clean natural gas from the turbines, using good combustion practices.
2-98A - Gas Turbine No. 2	NO _X **: 85.00 lb/hr; 281.54 TPY; Use Dry Low NO _X (DLN) combustors and burners. Maintain maximum NO _X emissions to 9 ppmv 15% O ₂ . The NO _X emissions for the combustion turbine during augmentation mode shall not exceed more than 15 ppmv at 15% O ₂ .
	CO: 50.00 lb/hr; 146.39 TPY; Good design and operating practices, natural gas as fuel with DLN burners. Maximum CO emissions are limited to 25 ppmv at 15% oxygen.
	Operating Capacity: 1,908 MM BTU/hr (LHV) PM ₁₀ : 4.68 lb/hr; 13.12 TPY; Particulate emissions of 0.03 lbs/MM BTU without any controls, firing clean natural gas from the burners, using good combustion
1-98B - HRSG Duct Burner No. 1	practices. NO _X : 46.80 lb/hr; 87.61 TPY; Use Dry Low NO _X (DLN) combustors and burners. CO: 46.80 lb/hr; 87.61 TPY; Good design and operating practices, natural gas as fuel with DLN burners. Maximum CO emissions are limited to 25 ppmv at 15% oxygen.
	Operating Capacity: 585 MM BTU/hr (LHV)
	PM ₁₀ : 4.68 lb/hr; 13.12 TPY; Particulate emissions of 0.03 lbs/MM BTU without any controls, firing clean natural gas from the burners, using good combustion practices.
2-98B - HRSG Duct Burner No. 2	 NO_X: 46.80 lb/hr; 87.61 TPY; Use Dry Low NO_X (DLN) combustors and burners. CO: 46.80 lb/hr; 87.61 TPY; Good design and operating practices, natural gas as fuel with DLN burners. Maximum CO emissions are limited to 25 ppmv at 15% oxygen. Operating Capacity: 585 MM BTU/hr (LHV)

	MAXIMUM ALLOWABLE EMISSIONS RATES
3-98 - Cooling Tower	PM ₁₀ : 0.92 lb/hr; 4.02 TPY; Use induced draft through the use of drift eliminators. Operating Capacity: 90,000 gpm
4-98 - Cooling Tower	PM ₁₀ : 0.92 lb/hr; 4.02 TPY; Use induced draft through the use of drift eliminators. Operating Capacity: 90,000 gpm
*** Permittee shall not opera 1,500 hours in a year.	te the gas turbine (combustion turbine) in the power augmentation mode for no more than

MACT requirements

The Carville Energy Center is a minor source of toxic air pollutants (TAPs) pursuant to LAC 33:III. Chapter 51. Maximum Achievable Control Technology (MACT) requirements are not required for this source because no Toxic Air Pollutants (TAP) are emitted above 10 tons per year for any individual TAP or 25 tons per year for any combination of TAPs.

The Carville Energy Center is subject to the following NSPS regulations:

NSPS - Subpart Da - Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978

NSPS – Subpart GG – Standards of Performance for Stationary Gas Turbines

Air Modeling Analysis

Impact on air quality from the emissions of the proposed unit will be below the National Ambient Air Quality Standards (NAAQS) and the Louisiana Ambient Air Standards (AAS) beyond industrial property.

The Industrial Source Complex, Short-Term, Version 3 (ISCST3) modeling performed for PSD-LA-638(M-1) is sufficient for this minor modification to the PSD permit. The modeling indicated maximum ground level concentrations of PM₁₀, NO_X and CO are below the preconstruction monitoring exemption levels and the ambient significance levels. No preconstruction monitoring, increment analysis, or refined modeling is required for these pollutants. VOC increases were less than 50 tons per year; therefore no ambient impact analysis was required.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to Section VIII of the draft Part 70 permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Section IX of the draft Part 70 permit.

The applicability of the appropriate regulations is straightforward and provided in the Facility Specific Requirements Section of the draft permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable

terms, conditions and standards are provided in the Facility Specific Requirements Section of the draft permit.

V. PERMIT SHIELD

A permit shield per 40 CFR 60.6(f) and LAC 33:III.507.I is not included in the proposed permits.

VI. PERIODIC MONITORING

A federally enforceable condition requires Carville Energy to limit the operating time in power augmentation mode to no more than 1,500 hours per year per combustion turbine, EQT001, 1-98A Gas Turbine No. 1, EQT002, 2-98A Gas Turbine No. 2. The NO_X emissions for the combustion turbine during augmentation shall not exceed more than 15 ppmv at 15% O₂. The turbine operating time in power augmentation mode shall be recorded each month as well as the operating time in power augmentation mode for the last twelve months. These records shall be kept on-site and available for inspection by the Office of Environmental Compliance, Surveillance Division. Turbine operating time in power augmentation mode above the maximum listed in this specific condition for any twelve consecutive month period shall be a violation of this permit and must be reported to the Office of Environmental Compliance, Enforcement Division. A report showing the turbine operating time in power augmentation mode shall be submitted annually to the Office of Environmental Compliance, Enforcement Division by March 31.

Permittee shall demonstrate compliance with the permitted emission limits of this permit by performing stack tests on the EQT001, 1-98A Gas Turbine No. 1, and EQT006, 1-98B HRSG Duct Burner No. 1, on GRP005, 1-98 No. 1 Cogeneration Unit, using methods found in 40 CFR 60, Appendix A as follows:

- A. Sulfur Dioxide by Method 6 Determination of Sulfur Dioxide Emissions from Stationary Sources.
- B. VOC by Method 25A or 25B Determination of Total Gaseous Organic Concentration using a Flame Ionization Analyzer or Nondispersive Infrared Analyzer

The gas turbines shall be tested at maximum capacity without the duct burners, and then the gas turbines shall be tested with the duct burners. Emissions from the duct burners will be calculated from the differences between the tests. [LAC 33:III.507.H.1]

Permittee shall demonstrate compliance with the permitted emission limits of this permit by performing stack tests on the EQT001, 1-98A Gas Turbine No. 1, and EQT006, 1-98B HRSG Duct Burner No. 1, on GRP005, 1-98 No. 1 Cogeneration Unit, using methods found in 40 CFR 60, Appendix A as follows:

- A. NOx by Method 20 Determination of Nitrogen Oxides, Sulfur Dioxide and Diluent Emissions from Stationary Gas Turbines.
- B. Carbon Monoxide by Method 10 Determination of Carbon Monoxide Emissions from Stationary Sources.
- C. Particulate Matter by Method 5 Determination of Particulate Emissions from Stationary Sources.

The gas turbines shall be tested at maximum capacity without the duct burners, and then the gas turbines shall be tested with the duct burners. Emissions from the duct burners will be calculated from the differences between the tests. [LAC 33:III.509]

Permittee shall demonstrate compliance with the permitted emission limits of this permit by performing stack tests on the EQT002, 2-98A Gas Turbine No. 2, and EQT007, 2-98B HRSG Duct Burner No. 2, on GRP006, 2-98 No. 2 Cogeneration Unit, using methods found in 40 CFR 60, Appendix A as follows:

A. Sulfur Dioxide by Method 6 - Determination of Sulfur Dioxide Emissions from

Stationary Sources.

B. VOC by Method 25A or 25B - Determination of Total Gaseous Organic Concentration using a Flame Ionization Analyzer or Nondispersive Infrared Analyzer

The gas turbines shall be tested at maximum capacity without the duct burners, and then the gas turbines shall be tested with the duct burners. Emissions from the duct burners will be calculated from the differences between the tests. [LAC 33:III.507.H.1]

Permittee shall demonstrate compliance with the permitted emission limits of this permit by performing stack tests on the EQT002, 2-98A Gas Turbine No. 2, and EQT007, 2-98B HRSG Duct Burner No. 2, on GRP006, 2-98 No. 2 Cogeneration Unit, using methods found in 40 CFR 60, Appendix A as follows:

A. NO_x by Method 20 - Determination of Nitrogen Oxides, Sulfur Dioxide and

Diluent Emissions from Stationary Gas Turbines.

B. Carbon Monoxide by Method 10 - Determination of Carbon Monoxide Emissions from Stationary Sources.

C. Particulate Matter by Method 5 - Determination of Particulate Emissions from

Stationary Sources.

The gas turbines shall be tested at maximum capacity without the duct burners, and then the gas turbines shall be tested with the duct burners. Emissions from the duct burners will be calculated from the differences between the tests. [LAC 33:III.509]

A federally enforceable condition requires the permittee to demonstrate compliance with the opacity emission limits of this permit by visually inspecting EQT001, 1-98A Gas Turbine No. 1, EQT002, 2-98A Gas Turbine No. 2, and on EQT006, 1-98B HRSG Duct Burner No. 1, EQT007, 2-98B HRSG Duct Burner No. 2, for visible emissions on a daily basis. If visible emissions are detected, then, within three (3) working days, the permittee shall conduct a six minute opacity reading in accordance with EPA Reference Method 9. Records of opacity checks - including data and time of the check, emission unit ID, operational status of the emission unit, observed results and conclusion, and any Method 9 results, shall be kept on site and available for inspection by the Office of Environmental Compliance, Surveillance Division.

A federally enforceable condition requires the permittee to install and operate DLN combustors on the gas turbines and low NOx burners on the HRSGs, EQT001, 1-98A Gas Turbine No. 1, EQT002, 2-98A Gas Turbine No. 2, and on EQT006, 1-98B HRSG Duct Burner No. 1, EQT007, 2-98B HRSG Duct Burner No. 2, to comply with the permitted emission limits for NOx.

A federally enforceable condition requires Carville Energy to limit the operating time of EQT 4, 8-01 Fuel Gas Heater, to no more than 500 hours per year. The operating time shall be recorded each month as well as the operating time for the last twelve months. These records shall be kept on-site and available for inspection by the Office of Environmental Compliance, Surveillance Division. Operating time above the maximum listed in this specific condition for any twelve consecutive month period shall be a violation of this permit and must be reported to the Office of Environmental Compliance,

Enforcement Division. A report showing the heater operating time shall be submitted to the Office of Environmental Compliance, Enforcement Division.

Permittee shall comply with the monitoring requirements as provided in 40 CFR Part 75, for GRP005, 1-98 No. 1 Cogeneration Unit, and GRP006, 2-98 No. 2 Cogeneration Unit, according to Permit No. 1280-00092-IV2. The emissions measurements recorded and reported in accordance with 40 CFR Part 75 shall be used to determine compliance by the unit with the Acid Rain emissions limitations and emissions reduction requirements for SO₂ and NO_X under the Acid Rain Program. The requirements of 40 CFR Part 75 shall not affect the responsibility of the owners and operators to monitor emissions of other pollutants or other emissions characteristics at the unit under other applicable requirements of the Act and other provisions of the operating permit for the source.

Permittee shall install and operate a NO_X diluent continuous emission monitoring system (consisting of a NO_X pollutant concentration monitor and an O_2 or CO_2 diluent gas monitor) to determine NO_X emissions according to 40 CFR 75.10(a)(2).

Permittee shall measure and record SO₂ emissions by providing information satisfactory to the Administrator using the applicable procedures specified in appendix D to 40 CFR 75 for estimating hourly SO₂ mass emissions according to 40 CFR 75.11(d)(2).

A federally enforceable specific condition requires Carville Energy to determine compliance with the Maximum Potential to Emit for GRP005, 1-98 No. 1 Cogeneration Unit, and GRP006, 2-98 No. 2 Cogeneration Unit, according to the procedure in Part 70 Specific Condition 1 of Permit No. 1280-00092-V2. Carville Energy will demonstrate compliance with the Maximum Potential to Emit limit by determining the contribution of emissions during both normal operations and also start-up/shut-down operations. Carville Energy will the monitor and record the monthly hours of operation for startup/shut-down operations and then determine the Maximum Potential to Emit using the calculations in Part 70 Specific Condition No. 1. Noncompliance with this limitation of the Max PTE is a reportable violation of the permit. Carville Energy shall notify the Office of Environmental Compliance, Enforcement Division if the calculated Max PTE (TPY) exceeds the permit limit listed in the permit. Carville Energy shall keep records of the calculated Time (hr/yr) SU/SD and Max PTE (TPY). Records shall be available for inspection by DEQ personnel. Carville Energy shall submit an annual report of the calculated Max PTE (TPY) for the preceding calendar year by the 31st of March to the Office of Environmental Compliance, Enforcement Division.

CARVILLE ENERGY CENTER
PART 70 PERMIT RENEWAL
CARVILLE ENERGY, LLC
ST. GABRIEL, IBERVILLE PARISH, Louisiana
Agency Interest Number: 51854
Activity Number: PER20040004
Draft Permit 1280-00092-V2

Unit or Plant Site	Programs Being Streamlined	Stream Applicability	Overall Most Stringent Program
Carville Energy Center	Not Applicable	1	•

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VIII. Glossary

- Best Available Control Technologies (BACT) An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.
- CAM Compliance Assurance Monitoring rule A federal air regulation under 40 CFR Part 64
- Carbon Black A black colloidal substance consisting wholly or principally of amorphous carbon and used to make pigments and ink.
- Carbon Monoxide (CO) (Carbon monoxide) a colorless, odorless gas produced by incomplete combustion of any carbonaceous (gasoline, natural gas, coal, oil, etc.) material.
- Continuous Emission Monitoring System (CEMS) The total combined equipment and systems required to continuously determine air contaminants and diluent gas concentrations and/or mass emission rate of a source effluent.
- Cooling Tower A cooling system used in industry to cool hot water (by partial evaporation) before reusing it as a coolant.
- Cyclone A control device that uses centrifugal force to separate particulate matter from the carrier gas stream.
- Duct Burner A device that combusts fuel and that is placed in the exhaust duct from another source (such as a stationary gas turbine, internal combustion engine, kiln, etc.) to allow the firing of additional fuel to heat the exhaust gases before the exhaust gases enter a steam generating unit.
- Federally Enforceable Specific Condition A federally enforceable specific condition written to limit the potential to Emit (PTE) of a source that is permanent, quantifiable, and practically enforceable. In order to meet these requirements, the

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draft permit containing the federally enforceable specific condition must be placed on public notice and include the following conditions:

- A clear statement of the operational limitation or condition which limits the source's potential to emit;
- Recordkeeping requirements related to the operational limitation or condition;
- A requirement that these records be made available for inspection by LDEQ personnel;
- A requirement to report for the previous calendar year.
- Grandfathered Status- Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.
- Heat Recovery Steam Generator (HRSG) A steam generator that recovers exhaust heat from a gas turbine, and provides economizing and steam generation surfaces.
- Hydrogen Sulfide (H₂S) A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.
- Maximum Achievable Control Technology (MACT) The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III. Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.
- National Emission Standards for Hazardous Air Pollutants (NESHAP) -Air emission standards for specific types of facilities, as outlined in 40 CFR Parts 61 through 63
- New Source Performance Standards (NSPS) Air emission standards for specific types of facilities, as outlined in 40 CFR Part 60
- New Source Review (NSR) A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of

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Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

- Nitrogen Oxides (NO_x) Compounds whose molecules consists of nitrogen and oxygen.
- Nonattainment New Source Review (NNSR) A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.
- Organic Compound Any compound of carbon and another element. Examples: Methane (CH₄), Ethane (C₂H₆), Carbon Disulfide (CS₂)
- Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥10 tons per year of any toxic air pollutant; ≥25 tons of total toxic air pollutants; and ≥100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).
- PM₁₀- Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.
- Potential to Emit (PTE) The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.
- Prevention of Significant Deterioration (PSD) A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.
- Selective Catalytic Reduction (SCR) A noncombustion control technology that destroys NO_X by injecting a reducing agent (e.g., ammonia) into the flue gas that, in the presence of a catalyst (e.g., vanadium, titanium, or zeolite), converts NO_X into molecular nitrogen and water.

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Sulfur Dioxide (SO₂) – An oxide of sulphur.

TAP - Toxic Air Pollutant - LDEQ acronym for air pollutants regulated under LAC 33 Part III, Chapter 51, Tables 1 through 3

Title V permit – See Part 70 Operating Permit.

- "Top Down" approach An approach which requires use of the most stringent control technology found to be technically feasible and appropriate based on environmental, energy, economic, and cost impacts.
- Turbine A rotary engine in which the kinetic energy of a moving fluid is converted into mechanical energy by causing a bladed rotor to rotate.
- Volatile Organic Compound (VOC) Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.